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Strategies to Mitigate the Adverse Effects of Climate Change - Perspectives of the Farmers of North-East India

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ABSTRACT

Climate change is one of the biggest environmental threats facing the world, potentially impacting food production and security. There is increasing evidence that climate change will strongly affect the North eastern region of India, especially the state of Nagaland and will be one of the challenging issues for future development. An attempt has been made to collect data from three hundred farmer respondents for providing suggestions to overcome the ill effects of climate change. The farmers suggested measures such as 'provision of adequate funds to the grassroots level workers and functionaries', 'creating intensive awareness among farmers about climate change and adaptation' and 'developing low cost adaptation technology'.

Keywords: Climate change; Vulnerability; mitigate; intensive awareness; climate change; adaptation; Nagaland.

Climate change is one the biggest challenges facing the world, potentially impacting food production and security, sustained water supply, biodiversity of forests and other natural ecosystems, human health and settlements. Climate change modeling studies for India show that the Indian sub-continent is likely to experience a warming of over 3-5°C and significant changes (increases and decreases) in flood and drought frequency and intensity.

Nagaland, one of the agrarian states of North-East India is also characterized by diverse climate regimes which are highly dependent on the southwest monsoon (June-October).

Over 70.00% of the crop area is under rainfed agriculture, and it is highly vulnerable to climate variability and climate change. The natural resources are also subjected to degradation and loss due to deforestation, unsustainable shifting cultivation practices, increased extraction of fuel wood, shortening of Jhum cycle (shifting cultivation) and forest fire leading to deforestation. Further, the poorest people are the most vulnerable to adverse impacts of climate change because they often reside in high exposure areas and also have low adaptive capacity to cope with climate risks. The objective of this study is to solicit suggestions from the grassroots farmers so that the policies by development

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Table 1.
Distribution of Respondents based on Suggestions to Mitigate the Adverse
Effects of Climate Change in Agriculture

(n= 300)

Sl. No.	Suggestions of farmers	Frequency	Percentage	Rank
1.	Provision of adequate funds to the grassroot level workers and farmers for adoption of adaptation measures.	285	95.00	I
2.	Creating intensive awareness among farmers about climate change and adaptation strategies towards climate change.	280	93.33	II
3.	Developing low cost adaptation technology to be adopted by all irrespective of their socio-economic conditions.	264	88.00	III
4.	Establishing a Research centre for adaptation to climate change, so that farmers can access information and technology.	250	83.33	IV
5.	Providing farm machineries and equipment suited for hilly terrain areas	240	80.00	V
6.	Establishing more number of value additions and processing units for agricultural produce.	235	78.33	VI
7.	Arranging for proper road infrastructure and connectivity to all the farms.	225	75.00	VII
8.	Providing timely information and early warning about changes in weather.	210	70.00	VIII
9.	Constructing infrastructural facilities for cold storage	204	68.00	IX
10.	Developing more number of drought and heat tolerant varieties of crops.	180	60.00	X
11.	Developing crop varieties which can withstand frost and water logging.	174	58.00	XI
12.	Offering compensation to the farmers in case of natural calamities.	135	45.00	XII
13.	Extending crop insurance to all the crops.	120	40.00	XIII

agencies can be designed to improve the most vulnerable sectors.

METHODOLOGY

The present investigation was carried out in Tseminyu sub-division of Kohima district in Nagaland, a constituent state in India. The respondents were identified and selected from eleven villages under Chunlikha Rural development blocks (R.D. block). Proportionate random sampling technique was followed to select a sample size of 300 respondents. The data were collected using a well-structured and pre-tested interview schedule. The respondents were requested to offer their suggestions to mitigate the adverse effects of climate change which they feel more important from the listed items. Suitable statistical analysis like percentage analysis and rank correlation were done to interpret the results.

FINDINGS AND DISCUSSION

The various suggestions given by the farmer respondents to overcome the constraints in the adoption of improved agricultural practices to mitigate the adverse effects of climate change in North-East India are given in Table 1. Thirteen suggestions were identified from the farmers and they are reported in percentages and ranked accordingly.

The data from Table 1 reveal that majority of the respondents (95.00%) suggested 'provision of adequate funds to the grassroots level workers and farmers for adoption of adaptation measures' and this was ranked as the first major suggestion. 'Creating intensive awareness among farmers about

climate change and adaptation strategies towards climate change' (93.33%) was ranked as the second major suggestion given by the respondents. 'Developing low cost adaptation technologies so that it can be adopted by all irrespective of their socio-economic conditions' (88.00 %) was ranked as the third major suggestion given by the respondents. 'Establishing a Research centre or Institute for adaptation to climate change; so that the farmers can easily access the information and technology' (83.33 %) was ranked as the fourth major suggestion given by the respondents. 'Providing farm machineries and equipments suited for hilly terrain areas' (80.00 %) was ranked as the fifth major suggestion given by the respondents. 'Establishing more number of value addition and processing units for agricultural produce' (78.33 %) was ranked as the sixth major suggestion given by the respondents. 'Arranging for proper road development and connectivity to all the farms' (75.00 %) was ranked as the seventh major suggestion given by the respondents. 'Providing timely information and early warning about changes in weather' (70.00 %) was ranked as the eighth major suggestion given by the respondents. Similar observation was also made by Vinaykumar (2015).

Thus the farmers of Nagaland offered suggestions to administrators, researchers and policy makers to design policies and programmes to face the threats of climate change to agriculture and food security.

The suggestions of the farmers need to be looked and analyzed further by the researchers, planners, policy makers and

developmental agencies. Programmes need to be designed in such a way that they satisfy, fulfill and address their grievances towards climate change. Also it is necessary to reorient the policies and programmes so that the threats of climate change can be addressed effectively.

REFERENCE

- Vinaykumar, C.T. & Umesh K.B. (2015). Perception and Adaptation of the Farmers to Climate Change. *Karnataka Journal of Agricultural Science*, (Special Issue) 28(5): 822-824.